EXHIBIT Y

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

SRI INTERNATIONAL, INC., a California Corporation,	)	
Plaintiff and Counterclaim-Defendant,	)	
v.	)	C. A. No.: 04-1199 (SLR)
INTERNET SECURITY SYSTEMS, INC., a Delaware Corporation, INTERNET SECURITY SYSTEMS, INC., a Georgia Corporation, and SYMANTEC CORPORATION, a Delaware Corporation,	)	
Defendants and Counterclaim-Plaintiffs.	)	

DECLARATION OF L. TODD HEBERLEIN

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REDACTED

I, L. Todd Heberlein, declare that:

1. I am the President of Net Squared, Inc.

2. I have been retained by counsel for Symantec Corporation as an expert witness in this action. If called to testify as to the truth of the matters stated herein, I could and would do so competently.

3. I received a Bachelor of Science degree in Computer Science and Math from the University of California, Davis in 1988, and a Masters of Science degree in Computer Science from the University of California, Davis in 1991.

4. I was the primary developer of the first network-based intrusion detection system, the Network Security Monitor (NSM), at UC Davis in the late 1980s and early 1990s. The NSM processed network packets and applied anomaly and signature detection techniques to detect intrusive activity. The work began in 1988, and we published numerous papers describing the work in 1990, 1991, and 1994. By the mid-1990s the NSM was deployed at numerous organizations including UC Davis, the Air Force, the Department of Energy, NASA, and the Department of Justice. The Air Force deployed it at over 100 Air Force sites globally. Within the Air Force and at Lawrence Livermore National Laboratory, the NSM was usually deployed at the organization's gateway to the rest of the Internet.

5. I was also one of the primary developers for the first hierarchical and distributed intrusion detection system, the Distributed Intrusion Detection System, (DIDS) which integrated NSM, host monitors for SunOS and VMS, and a centralized Director. DIDS was deployed at UC Davis and Lawrence Livermore National Laboratory in 1992. I have been told that the Air Force deployed DIDS at other locations at a later date.

6. From 1993 to 1995 I worked on a DARPA contract called Intrusion Detection for Large Networks, and in 1995 I presented results, including an initial fully distributed intrusion detection capability, to our DARPA Program Manager, Teresa Lunt.

That work eventually became the Graph-based Intrusion Detection System (GrIDS). In addition to intrusion detection technology, I researched issues about the fundamental nature of computer vulnerabilities, and that work won a "best paper" award at the National Information Systems Security Conference in 1996.[1] The paper was also republished in a book by Dorothy and Peter Denning.[2]

7. I founded Net Squared, Inc. in 1996. At Net Squared I performed research and development in computer security for numerous organizations including the Air Force, Lawrence Livermore National Laboratory, the Defense Advanced Research Projects Agency (DARPA), Office of Naval Research, the Intelligence Community, and the Federal Aviation Administration. At Net Squared I developed the Network Monitoring Framework (NMF), a library of network monitoring C++ objects, and Network Radar, a suite of network monitoring applications built on the NMF libraries. Network Radar tools were integrated into larger, hierarchical intrusion detection systems by the Air Force and Boeing, including EPIC, EPIC2, AIDE, AFED, and IDIP. Network Radar was deployed at UC Davis, the Air Force's Rome Research Laboratory, and during numerous Air Force exercises. From approximately 2002-2003 I also led a project called TrendCenter, which integrated and correlated intrusion detection alerts from unrelated organizations. As part of that effort I developed SANS' initial Internet Storm Center prototype.

8. In addition to traditional intrusion detection capabilities (anomaly detection and signature detection), I developed or help develop several other intrusion detection technologies. For example, we profiled network services in NSM and DIDS,

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[1] L. T. Heberlein, M. Bishop, "Attack Class: Address Spoofing," 19th National Information Systems Security Conference, Baltimore, MD, 22-25 Oct. 1996, pp. 371-377.

[2] D. Denning and P. Denning, INTERNET BESIEGED, COUNTERING CYBERSPACE SCOFFLAWS, 1st ed. (Oct. 3, 1997) at Chap. 10.

and that work was also part of a feature selection effort led by Jeremy Frank.[3] The profiling of network services work, later based on a feed-forward back-propagation neural network, was also rolled into Network Radar's Non-Cooperative Service Recognition (NCSR) technology.

9. I also did the initial work on network thumbprinting that was introduced in the 1992 Internetwork Security Monitor paper,[4] and I helped refine the thumbprinting technology that was published in a 1995 IEEE paper.[5] Thumbprinting uses a multivariate statistical technique called principal component analysis to reduce a high dimensional object to a small dimensional object. Vector distances of the lower dimensional objects were then used to determine if the objects were correlated.

10. Both the NCSR and the thumbprinting work were also rolled into Network Radar, which was able to detect the earliest stages of the ILOVEYOU worm as it hit the Air Force's Rome Labs.

11. A summary of my professional experience and publications are attached as Exhibit A.

12. I receive compensation in the amount of $258.00 per hour for the time that I devote to this matter. My compensation is not dependent in any way on the outcome of this matter.

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[3] J. Frank, "Machine Learning and Intrusion Detection: Current and Future Directions," Proc. of the 17th National Computer Security Conference, October 1994.
[4] L.T. Heberlein, B. Mukherjee, K.N. Levitt., "Internetwork Security Monitor: An Intrusion-Detection System for Large-Scale Networks," Proc. 15th National Computer Security Conference, pp. 262-271, Oct. 1992.
[5] S. Staniford-Chen, and L.T. Heberlein, "Holding Intruders Accountable on the Internet," Proc. of the 1995 IEEE Symposium on Security and Privacy, Oakland, CA, 8-10 May 1995, pp. 39-49.

I. METHODOLOGY AND BASES

13. In preparing my opinions and analysis of the art, I have thoroughly reviewed the entire specification and claims of U.S. Patents No. 6,321,338 (the '338 patent); 6,484,203 (the '203 patent); 6,708,212 (the '212 patent); and 6,711,615 (the '615 patent) (collectively, the patents-in-suit). I have also reviewed each of the prosecution histories and the Microfiche Appendix included with the patents-in-suit.

14. I have also reviewed the expert report of Mr. Frederick Avolio, and have indicated in my declaration instances where I have relied upon this report.

15. I have reviewed an extensive body of prior art publications and product documentation. I have also spoken directly with a number of individuals who I understand and believe to be personally knowledgeable with respect to the prior art embodiments discussed below. A list of the prior art publications and documentation I have reviewed and the individuals with whom I have spoken in forming the opinions set forth below is attached as Exhibit B.

16. I have also compared each of the claims of the patents-in-suit with certain prior art publications and embodiments discussed below.

17. In general, my methodology of inquiry with respect to each of the principal prior art publications and embodiments relied upon in my opinions was as follows:

a. With regard to prior art publications, I reviewed each publication in detail.

b. With regard to product embodiments, I reviewed the marketing literature, product documentation and manuals relating to the prior art system to familiarize myself with the features, functions and capabilities of the system.

c. With regard to product embodiments, I typically also engaged in a lengthy conversation with at least one individual who was personally knowledgeable of the facts relating to the development, marketing and history of the prior art embodiment. In this conversation I attempted both to challenge and to confirm my understanding of the facts that I had derived from my prior investigations.

d. In general I have attempted to maintain a skeptical perspective with respect to the materials I have reviewed in order to satisfy myself that the bases for my opinions are well-founded and truly convincing to one skilled in the art.

II. RELEVANT FIELD OF ART AND PERSON OF ORDINARY SKILL IN THE ART

18. The patents-in-suit relate to the field of network monitoring, in particular network monitoring for the purpose of detecting suspicious or intrusive network activity. I have based this determination upon my examination of the patents-in-suit. For instance, the '338, '212 and '615 patents are all entitled "Network Surveillance." The '203 patent is entitled "Hierarchical Event Monitoring and Analysis." The '338 patent claims a "method of network surveillance." The '203, '212 and '615 patents claim an "enterprise network monitoring system." The patents-in-suit claim network monitoring for the purpose of detecting "suspicious network activity."

19. In light of my opinion as to the field of art relevant to the patents-in-suit, I am of the opinion that one of ordinary skill in the art as of the filing date would have been someone with an undergraduate degree in Computer Science with at least three to five years experience in computer programming and network design with an emphasis in network monitoring technology and intrusion detection.

20. Based upon my own qualifications, I was a person of at least ordinary skill in the art as of the filing date.

III. THE SPECIFICATION OF THE PATENTS-IN-SUIT

A. INVENTORS' DESCRIPTION OF THEIR INVENTION

21. I have reviewed the specifications of all four of the patents-in-suit, including the written description and the claims. I have also reviewed the file histories of all four patents-in-suit. The patents-in-suit also include a Microfiche Appendix, which I reviewed in detail. I have based the following description of the alleged inventions on these documents.

22. The '203, '212 and '615 patents are all continuations of the '338 patent. I understand that this means that all four patents-in-suit are entitled to the filing date of the '338 patent, which is November 9, 1998. I also understand that as continuations, the '203, '212 and '615 patents may not add "new matter" or additional disclosures to the specification of the '338 patent. Although the "References Cited," "Abstract" and "Summary" sections of the four patents-in-suit differ in some respects, the Figures and "Detailed Description" sections are essentially identical and provide a common description of the alleged inventions. Because the most relevant portions of the written description of the four patents-in-suit share a common disclosure, I have cited only to the '338 patent in my description of the alleged inventions. However, this description applies to all four of the patents-in-suit.

IV. LACK OF NOVELTY – DESCRIPTION OF PRIOR ART SYSTEMS

23. The following sections discuss the features and functionality of certain prior art publications and systems that in my opinion demonstrate that some or all of the asserted claims are invalid as anticipated.

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B. EMERALD 1997

38. This section covers the EMERALD design as described in the paper titled "EMERALD: Event Monitoring Enabling Responses to Anomalous Live Disturbances," published in the Proceedings of the 20th National Information Systems Security Conference in October of 1997 ("*Emerald 1997*"). Phil Porras, one of the named inventors of the patents-in-suit, and Peter Neumann are the authors of this paper. The primary sponsor for this work was the Department of Defense via the Defense Advanced Research Projects Agency (DARPA).

39. *Emerald 1997* describes an architecture collectively called EMERALD for monitoring an enterprise network. EMERALD analyzed an input stream such as network

[10] *JiNao Report* at 35.

packets, and applied anomaly detection, misuse detection, correlation, and aggregation to detect possible misuse. EMERALD's internal modules used a well-defined API to pass messages between modules; EMERALD also used a well-defined protocol to support hierarchical and peer-to-peer communications to provide scalability and detect larger scale attacks.

40. EMERALD as described in this publication had the following salient features:

- Monitored network services and network components such as routers and gateways.
- Analyzed network packets, audit logs, application logs, and results of other intrusion detection sensors; these data sources are referred to as an event stream.
- Used anomaly detection based on the NIDES algorithms to analyze the event stream.
- Used signature detection to analyze the event stream for known examples of misuse.
- Provided an Application Programming Interface (API) to allow third-party modules and sensors to participate in an EMERALD system.
- Correlated analysis from the anomaly detection engine, the signature detection engine, and potentially other analysis engines.
- Supported hierarchical monitoring beginning at the lowest level (service monitor), with the next higher level being a domain monitor, and the highest level being an enterprise monitor.

41. The system described in *Emerald 1997* shared the basic elements of SRI's previous work in IDES and NIDES, but it was designed to be distributed and independent of any particular data source. The paper states that EMERALD's distributed design addresses scalability. Designing the system to be independent of the underlying data source makes it easier to incorporate other data sources, including results from other intrusion detection sensors.

42. EMERALD took the basic NIDES architecture – an anomaly engine, a signature/misuse engine, and a resolver – and generalized it for any input stream. The earlier SRI intrusion detection systems (IDES, NIDES and Safeguard) shared a similar architecture, but they were largely focused on an input stream of host-generated data (e.g., audit trails) to analyze host-related subjects (e.g., user accounts and processes). EMERALD generalized the approach so that the system was not tied to any specific input stream or subject matter.[11]

43. Furthermore, because the input stream was generalized, the output event stream for one monitor could be used as the input stream for another monitor. Because EMERALD monitors could be composed in this manner, a hierarchy of monitors could be created, and this hierarchical approach in turn created the ability to scale the analysis to larger environment.

44. An EMERALD "Service Monitor" read input streams such as network packets, and then analyzed that input stream with an anomaly detection engine and a signature detection engine. The results of these analyses engines were passed to the Resolver, which could correlate the results, take some type of response, or pass its analysis to hierarchically higher monitors.

45. The next level of monitor in the hierarchy was called the "Domain Monitor", and it analyzed and correlated the results from the lower level Service Monitors. The Domain Monitor shared the same architecture as the Service Monitor, including an anomaly detection engine, a signature/misuse detection engine, and a Resolver. The Domain Monitor could also pass the results of its analysis to other Domain Monitors via peer-to-peer sharing, or it could pass the results to a hierarchically higher Enterprise Monitor.

[11] *Emerald 1997* at Fig. 1 shows the "generic EMERALD monitor architecture."

46. The top level of monitor in the hierarchy was called the "Enterprise Monitor". The Enterprise Monitor analyzed and correlated the Domain Monitors' results. The Enterprise Monitor shared the same architecture as the Domain and Service Monitors, namely, an anomaly detection engine, a signature/misuse detection engine, and a resolver.

47. EMERALD processed any type of input stream. Examples in the *Emerald 1997* paper included audit data, network datagrams (i.e., packets), SNMP traffic, application logs, and results from other intrusion detection sensors.[12]

48. EMERALD used a combination of anomaly detection, signature detection, and a resolver to analyze the input streams. The signature/misuse engine detected known intrusive behavior. The anomaly engine detected unusual activity that might indicate previously unknown intrusive behavior. The resolver integrated and correlated information from the anomaly and signature engines and potentially from other monitors as well.

49. The signature analysis engine is described as mapping an incoming event stream against "abstract representations of event sequences that are known to indicate undesirable activity."[13] The objectives of the signature analysis depend on which level in the hierarchy the analysis is operating at: service monitors target known attacks on network services and infrastructure, whereas above the service layer, the signature engines scan aggregated reports for more global coordinated attack scenarios.

50. The anomaly detection engines are described as using the statistical profiling type of anomaly detection developed in NIDES. The paper notes that the "underlying mechanisms" of NIDES are "well suited to the problem of network anomaly

[12] *Emerald 1997* at 356.
[13] *Emerald 1997* at 359.

detection, with some adaptation."[14] *Emerald 1997* then described the modifications to the statistical profiling mechanism needed in order to achieve the generality of input desired in EMERALD.

51. EMERALD's resolver was responsible for responding to suspicious behavior. The paper describes several different actions the resolver could take in response to detected suspicious activity including: (1) closing connections, (2) terminating processes, (3) calling a host's integrity checker to verify operating state, (4) propagating information to other monitors, (5) modifying the analysis of its detection engines, and (6) sending information to the user interface.[15]

52. Furthermore, given the similarity in language between *Emerald 1997* and the patents, my opinions on invalidity and obvious with regard to *Emerald 1997* and all other NIDEs and Emerald–related references do not change regardless of which claim construction position is ultimately adopted by the Court.

53. SRI has claimed that *Emerald 1997* does not teach the specific categories of network traffic data called out in, for example, '338 claim 1, '203 claim 1, and '615 claim 1.[16] First, it is important to point out that monitoring these particular types of "measures" of network packets or "network traffic data" was not new or novel – all of them had been monitored by other systems before. The inventors have acknowledged this fact for many of the claimed categories.[17]

54. Second, as explained in the Expert Report of Frederick Avolio, *Emerald 1997* explicitly stated that the disclosed EMERALD system could monitor and analyze "network infrastructure" including firewalls. *Emerald 1997* also disclosed monitoring an

[14] *Emerald 1997* at 359.
[15] *Emerald 1997* at 361.
[16] *See* SRI International, Inc.'s "Amended" Response to Symantec's Invalidity and Inequitable Conduct Contentions.
[17] Porras Tr. 289-295, 444-454; Valdes Tr. 283-287.

event stream from an application log, which would include a firewall log. Firewalls in 1997 provided a common set of monitoring and logging features which were well-known in the art at the time. Thus, one of skill would have understood from the *Emerald 1997* disclosure that one should monitor network connections, including network connection requests and denials, and data transfers, including network packet data volume/network packet data transfer volume. I have reviewed Mr. Avolio's report and spoken with him in detail about it. I agree with and adopt in my own report his report, including his analysis and conclusions. I also adopt the references he relied upon in reaching his conclusions.

55. In addition, *Emerald 1997* disclosed monitoring an event stream of SNMP traffic[18] and monitoring network infrastructure.[19] The Internet Standards (RFCs) for SNMP traffic and related network infrastructure management data provide monitoring for a variety of different categories of network traffic data. The claimed categories of network traffic data would have been understood by one of ordinary skill in the art to be disclosed by this explicit reference to monitoring SNMP traffic and network infrastructure.

56. Furthermore, the types of network traffic one should monitor to detect suspicious activity or network intrusions flow naturally from the types of attacks that one is looking for. As the intrusion detection and computer security fields developed, practitioners in the field began cataloging and tracking security-related intrusions seen by different computer networks. For example, after the Morris worm incident in November 1988, which caused extensive damage to different internet systems, DARPA called on the Software Engineering Institute at CMU to set up a center to coordinate communication among experts during security emergencies.[20] Known as the Computer Emergency

[18] *Emerald 1997* at 356.
[19] *Emerald 1997* at 355.
[20] http://www.cert.org/meet_cert/meetcertcc.html

Readiness Team ("CERT"), CERT issued public advisories to warn of new attacks or vulnerabilities.

57. For example, in September 1996, CERT first issued a warning about TCP SYN flooding and IP Spoofing attacks.[21] This advisory explained the SYN flooding attack, in which numerous requests to open a TCP connection are sent that cannot be responded to, flooding the system with half-open connections and making it difficult for the system to continue to communicate. One of skill in the art at the time would have known about SYN flooding attacks and understood that one should monitor network connection requests and denials to detect such an attack. A variety of other types of network attacks were also well-known at the time, which would have similarly indicated different categories of network traffic to monitor.[22]

58. To the extent that the various categories of network traffic data or measures of network packets are not disclosed in *Emerald 1997*, it would have been obvious to one of skill in the art to combine *Emerald 1997* with any of the many well-known firewalls, intrusion detection research systems, commercial intrusion detection systems, and IETF defined standards on what to monitor for network infrastructure, all of which were already monitoring these network traffic data categories. In fact, *Emerald 1997* explicitly pointed the reader to other systems, including NSM.[23] For example, both ISS RealSecure and NetRanger were well-known network intrusion detection systems, and one of skill upon reading *Emerald 1997* would have been motivated to look at the traffic data being monitored by such systems in order to select the best categories of

[21] CERT Advisory CA-1996-21 [SYM_P_0548726-734]. *See also* Schuba et al., "Analysis of a Denial of Service Attack on TCP," Proc. of the 1997 IEEE Symposium on Security and Privacy, Oakland, CA, 208-23 (May 4-7 1997) [SYM_P_0535408-28].
[22] Numerous other attacks were well-known at the time. *See, e.g.*, CERT Advisory CA-1996-26 "Denial-of-Service Attack via ping, Dec. 18, 1996 [SYM_P_0548718-725] (discussing ICMP error packets and oversized ICMP datagrams).
[23] *Emerald 1997* at 364.

traffic for use with EMERALD. Indeed, I understand that the inventors in 1997 were actually working with and looking at Sun Microsystem's SunScreen firewall, further supporting my opinion that firewalls and other IDS systems would have been obvious sources of information about useful network traffic data categories.[24]

59. I also understand that SRI claims that the *Emerald 1997* paper does not provide an "enabling disclosure" of a statistical detection method.[25] I disagree. *Emerald 1997* included an entire section entitled "Scalable Profile-Based Anomaly Detection" which describes how EMERALD will incorporate and modify the well-known NIDES algorithms for statistical profiling. *Emerald 1997* also pointed the reader to additional references on the NIDES algorithms. Furthermore, other additional SRI publications had also already disclosed the NIDES algorithms in detail.[26] To the extent that the specific algorithms for statistical profiling are not incorporated-by-reference into *Emerald 1997*, it would have been obvious to one of skill in the art to combine *Emerald 1997* with prior NIDES-related publications, since *Emerald 1997* states that the NIDES algorithms form the basis for the statistical profiling disclosed. One of skill would have been motivated to further investigate these specific algorithms in order to improve the performance of the system.

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[24] Valdes Tr. 68-69; 12-123. *See also Emerald – Conceptual Design 1997* at p. 88. [SRI 012400].

[25] *See* SRI International, Inc.'s "Amended" Response to Symantec's Invalidity and Inequitable Conduct Contentions.

[26] *See, e.g.*, A. Valdes and D. Anderson, *Statistical Methods for Computer Usage Anomaly Detection Using NIDES*, Proc. of the Third International Workshop on Rough Sets and Soft Computing, January 1995 ("*Statistical Methods*") [SYM_P_0068937-942]. Mr. Valdes testified that the equations disclosed in this paper were suitable for network monitoring. Valdes Tr. 344-346. Furthermore, the patents' specification explicitly states that the techniques described in this paper may be used for the "profile engine" which "can profile network activity via one or more variables called measures." '338 col. 5:43-50.

1. Emerald 1997, Intrusive Activity 1991, NIDES 1994

60. *Emerald 1997* also references two additional publications in both the text of the paper itself, and in the list of references. *Emerald 1997* explains that the statistical algorithms in H. Javitz and A. Valdes, "The NIDES statistical component description and justification," Technical report, Computer Science Laboratory, SRI International, Menlo Park, CA March 1994 (*"NIDES 1994"*) provides the foundation for the profile-based anomaly detection in *Emerald 1997*:

> "Requirements for an anomaly-detection system that became IDES were documented in [6]. This research led to the development of the NIDES statistical profile-based anomaly-detection subsystem (NIDES/Stats), which employed a wide range of multivariate statistical measures to profile the behavior of individual users [9]."[27]

61. In addition, *Emerald 1997* also directs one to the Network Security Monitor (NSM) system for analysis of network traffic, and identifies L.T. Heberlein, B. Mukherjee, K.N. Levitt., "A Method to Detect Intrusive Activity in a Networked Environment," Proc. 14th National Computer Security Conference, pp. 362-371, Oct. 1991 (*"Intrusive Activity 1991"*) as describing NSM:

> "[T]he Network Security Monitor [7] seeks to analyze packet data rather than conventional audit trails..."[28]

62. Given these explicit references in *Emerald 1997* to both *NIDES 1994* and *Intrusive Activity 1991*, these three references should be considered to be a single disclosure for purposes of anticipation. In the alternative, the citations above provide a motivation to combine these three references in order to make and improve the statistical profiles and network traffic monitoring claimed in the patents-in-suit.

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[27] *See Emerald 1997* at 359.
[28] *See Emerald 1997* at 364.

V. OBVIOUSNESS

63. In the previous sections, I have already explained many reasons why one of skill in the art would have been motivated to combine a particular reference or system with another. In addition to those explanations, I will further elaborate some factors that relate to the obviousness of the alleged inventions. In general when addressing obviousness, I have considered the issue of what a person of ordinary skill in the art prior to November 9, 1997 would have done if confronted by the problem of detecting network intrusions if that person had no knowledge of the patents-in-suit. I have further considered the problem of detecting network-related intrusions across an enterprise network, spanning multiple domains, and how that problem would have been confronted by one of skill in the art in the relevant timeframe.

64. It is important to point out that by November 1997, there was a very rich body of prior art in the network monitoring and intrusion detection fields. Many different individuals and research groups had been working on these issues for many years. Thus, one of ordinary skill in the art would have known about many such systems and past work. Given this large body of prior work, it is impossible for me to enumerate all the possible, likely combinations. My report discusses merely a sample of the possibilities.

65. As discussed earlier with regard to *Emerald 1997*, much of the motivation to look at particular categories of network traffic stems directly from the types of attacks that can be launched against networks. As I understand the alleged inventions of the patents-in-suit, a key issue is whether one of skill in the art would have been motivated to use the claimed network traffic data categories as an input into a network-based intrusion detection system. In my opinion, the claimed network traffic data categories broadly direct one to look at parts of mainly network packet headers, or to look at the volume of data in a packet. If looking for network-based intrusions, or indeed any type of activity

on a network, one of skill in the art prior to November 1997 would naturally have looked at these parts of a network packet.

66. A network packet typically consists of a header portion and a data portion. The structure of network packets was well-known and indeed trivial in the computer science field in the 1990s. In addition, monitoring and parsing different portions of network packets to gain relevant information about a particular part of a network packet was similarly common in the computer science field.

67. By 1997, it was well-known that attackers could use either the header portion of a packet or a data portion of a packet to carry out an attack.[29] While attacks like SYN floods, IP scans, port scans, and SATAN scans primarily relied on the header portion of network packets, other attacks such as buffer overflow (also known as buffer-overrun) exploits, password cracking, and worms relied heavily on transporting data or code within the data portion of network packets.

68. Attacks that relied primarily on the header portion of network packets used the various data fields contained in the header to carry out the attack. These fields are ordinarily used by various network protocols to administer the transfer of data via network packets. For example, some header fields—such as the SYN and ACK fields in a TCP header—relate to administering the establishment of network connections. Other header fields—such as the source IP address and destination IP address fields in an IP header—relate to administering the transfer of data from one computer to another over a network. Because well-known attacks used such fields in malicious ways, one of ordinary skill in the art would have been motivated to monitor header fields using both profile-based anomaly detection and signature detection.

[29] NetRanger 1.3.1 User's Guide at 4-61 (see, e.g., IP Fragment attack and FTP CWD ~root exploit).

69. Other attacks relied primarily on the data portion of network packets to transfer malicious data or code. As noted previously, it was well-known by the early 1990s that several network-based attacks transported malicious code, data, or commands via the data portion of network packets. Because these attacks placed malicious code, data, or commands in the data portion of network packets, one of ordinary skill in the art would have been motivated to monitor the data portion of network packets using both profile-based anomaly detection and signature detection.

70. As I described earlier, network protocols are typically organized as a layered stack, with each protocol being built on the protocol or protocols directly beneath it. It was well-known by 1997 that attacks could be carried out at any layer of the network protocol stack. For example, while SYN attacks were carried out using transport layer TCP flags relating to connection establishment, many attacks directed at FTP servers were carried out using application layer FTP-specific commands. Because each and every network protocol layer was the subject of attacks, one of ordinary skill in the art would have been motivated to monitor each and every layer using both statistical profile-based anomaly detection and signature detection.[30]

71. To summarize, in order to increase the number of attacks that could be detected, one of ordinary skill in the art would have been motivated to use intrusion detection systems to analyze all portions of a network packet, including the header and data portions of packet formats from each network protocol layer. The nature of the problem to be solved would have led one of skill to examine the claimed network traffic data categories.

[30] The need to monitor each and every network protocol layer is related to the need to monitor both the header and data portions of network packets, since packets at a given layer typically encapsulate packets at a higher layer. For example, in order to monitor transport-layer TCP segments, one has to extract those segments from the data portion of network-layer IP packets.

72. By 1997, it was also well-known to those of skill in the art that attackers targeted all types of network entities, including specialized entities like routers, gateways, proxy servers, firewalls, proxy servers, and any other device connected to a network. There were several reasons why attackers targeted a wide variety of network entities. First, because of the prevalence of use of standard network protocols, an attack that exploited one of these standard protocols could typically be launched against the wide array of network entities using that protocol. For example, a SYN flood that was initially developed to attack servers utilizing TCP could just as easily be launched against a handheld networked device that also utilized TCP. Thus, just as network-based intrusion detection leveraged the network protocols to monitor several different types of network entities, attackers could also leverage the use of these protocols to expand their base of attack targets.

73. Second, attackers had an incentive to attack these specialized network entities that comprised the internet infrastructure itself. Infrastructure entities like routers and gateways were attractive targets because an attack on those targets would be felt by every network entity that used the router or gateway as an intermediary for communication to the rest of the network. In other words, attacks on routers and gateways potentially would be more widely felt. Because of the importance of these entities that comprised the network infrastructure itself, one of ordinary skill in the art would have been motivated to protect these entities using intrusion detection systems.

74. By November 1997, there also existed a strong motivation to design intrusion detection systems to interoperate with both other intrusion detection systems and other types of network security devices. Standards-based efforts such as CIDF had emerged to promote interoperability through the use of common protocols and common APIs. There were several factors driving this move towards greater interoperability. From a technical standpoint, greater interoperability enhanced the ability of an intrusion

detection system to analyze information from a wider range of network security devices (like firewalls). Greater interoperability also enhanced scalability by allowing intrusion detection systems to work and communicate with each other regardless of whether these systems were administered by the same party. In this way, cooperation enabled by greater interoperability would allow intrusion detection systems to scale up to larger networks. From a commercial standpoint, greater interoperability allowed new products to work with and leverage existing deployments of heterogeneous network security solutions.

75. Both the SRI IDES/NIDES/EMERALD team and UC Davis' Computer Science Laboratory were well-known players in the intrusion detection space in the 1990s. Both groups published, presented publicly at conferences, and were involved in related DARPA projects. One of ordinary skill in the art would have known about these groups, and would have considered them to be doing related work. Given that both teams were attempting to solve problems relating to network intrusion detection, it would have been obvious to one of skill in the art that it would be worthwhile to combine systems from these two groups.

76. In addition, given the number of "surveys" and compilations discussing various different intrusion detection systems in existence prior to November 9, 1997, there was ample direction and motivation to combine such systems. One such example[31] is a 1994 paper on which I am a named author: B. Mukherjee, L. Todd Heberlein and K. N. Levitt, "Network Intrusion Detection," IEEE Network May/June 1994 ("*NID 1994*").[32] This paper notes that "[t]he intrusion detection problem is becoming a

[31] For additional examples in 1997, see L. Todd Heberlein, Network Radar presentation, 24 July 1997; and http://web.archive.org/web/19971011083618/www.hokie.bs1.prc.com/ia/N2-TODD.htm

[32] I understand that a copy of this publication was actually produced from the files of Mr. Porras, one of the named inventors. *See* SRI 058251.

challenging task due to the proliferation of heterogeneous computer networks."[33] The paper also points out that it is common to combine statistical and rule-based systems, and provides the reader with several examples of each: "[t]ypically, IDSs employ statistical anomaly and rule-based misuse models in order to detect intrusions..." "[i]n this paper, several host-based and network-based IDSs are surveyed, and the characteristics of the corresponding systems are identified."[34] The paper encourages further investigation: "new and more-effective detection strategies must be investigated."[35] The paper specifically encourages investigation into intrusion detection for large networks: "much more research is expected to be conducted, e.g., how can the intrusion-detection concept be extended to arbitrarily large networks..."[36]

77. Given these specific pointers in *NID 1994* to a variety of existing intrusion detection systems, as well as the specific direction to combine statistical and rule-based approaches and expand IDS to better cover arbitrarily large networks, one of skill in the art would have been motivated to combine the systems discussed in this paper, as well as other related systems, to achieve the goals of the paper. *NID 1994* encouraged one of skill to investigate and combine existing systems.

A. SECONDARY CONSIDERATIONS

78. I have been informed that it is appropriate in analyzing the obviousness of an alleged invention to consider "secondary considerations" of non-obviousness. I understand that secondary considerations include: commercial success of the invention; satisfying a long-felt need; failure of others to find a solution to the problem; and copying of the invention by others. Other secondary considerations include licensing by competitors and contemporaneous recognition of the inventor's achievements.

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[33] *NID 1994* at 26.
[34] *NID 1994* at 26.
[35] *NID 1994* at 41.
[36] *NID 1994* at 41.

79. Based upon my review and understanding of the facts, as well as my own personal knowledge, I am not aware of any secondary considerations supporting a finding that the patents-in-suit were not obvious.

80. In my opinion, the Emerald system disclosed in the patents-in-suit did not satisfy any long-felt need that I was aware of. I was very familiar with intrusion detection systems in the late 1990s and was deeply involved in the field. I do not recall anyone identifying any "need" fulfilled only by the Emerald system. My peers in the intrusion detection field were aware of the Emerald system through conferences, but I do not recall any particularly unique feature of Emerald that was considered extremely valuable to the intrusion detection community.

81. Furthermore, I am not aware of anyone copying the Emerald system.

82. Many other systems, some of which have been discussed in this report, were able to successfully detect computer intrusions and in particular network attacks. For example, the NSM system and its many different incarnations, such as ASIM, were successful in detecting network attacks. (NSM became ASIM, which as indicated in Mr. Teal's report was widely used by the Air Force). Thus the government, which funded Emerald, was actually using other intrusion detection systems, including some that started out as research-oriented projects such as NSM. In addition, DIDS, another research-oriented system from UC Davis, was very successful in developing useful correlation features to track users across different systems, solving a key problem in computer security.

83. It is important to recognize that there is a difference between actual commercial products and research funded by the government. Laudatory statements regarding research projects do not necessarily translate into success in the commercial world, because research projects are evaluated on a different set of metrics than actual commercial projects. Research systems typically are run in a limited, lab environment,

whereas commercial systems need to run robustly in a messy, real-world environment. Furthermore, research projects typically only address a small part of the problem, whereas commercial systems need to have a rich supporting infrastructure to make them usable products.

84. In the commercial realm, the NetRanger system was a commercial success used by Fortune 500 companies to protect their networks from intrusions. NetRanger was also successful in government testing, with the DOD/SPOCK report stating:

> "Results of the tests clearly demonstrated that when properly configured, the NetRanger hardware/software package:
>
> 1) Can be used to detect, report, and act on intrusion related activities launched across a network with a high degree of accuracy,
>
> 2) Would detect all attempted penetrations signatures contained in the default list as installed in the NetRanger for this demonstration,
>
> 3) Can be used to provide practical and effective intrusion detection, reporting, and selected automatic response actions."[37]

In addition, the DOD/SPOCK report concluded "[i]n the true sense, this suite of tests proved the viability of Real-Time Network Intrusion Detection and Response for implementation today, in a warfighter networked environment."[38]

85. I do not believe that the EMERALD system ever achieved the success that NSM/ASIM and NetRanger did.

VI. ENABLEMENT AND SUFFICIENT WRITTEN DESCRIPTION OF THE PATENTS-IN-SUIT AND PRIOR ART

A. LEGAL STANDARD

86. I understand that the specification of a patent must provide an enabling disclosure. I understand that this requires that a person of skill in the art, using

[37] DOD/SPOCK Report at 2 [SYM_P_0074255- SYM_P_0074481 at SYM_P_0074263].
[38] DOD/SPOCK Report at 5.4 [SYM_P_0074255- SYM_P_0074481 at SYM_P_0074287].

knowledge available to them and the disclosure in the patent, could make and use the invention without undue experimentation. I also understand that the enablement standard for prior art publications is similar to that required for a patent specification.

87. I have been informed that the factors to be assessed in determining whether experimentation is "undue" include: the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art, and the breadth of the claims.

88. I also understand that the specification of a patent must describe the subject matter claimed in the patent in a manner that conveys to one of skill in the art that the inventors had possession of the subject matter claimed at the time the patent application was filed.

B. Analysis of Enablement / Written Description of *Emerald 1997* and *Live Traffic Analysis*

89. I understand that SRI contends that the disclosures in certain prior art references, including *Emerald 1997*, are not enabling for certain claim limitations.[39] It is my opinion that the prior art references discussed in my report, including *Emerald 1997* and *Live Traffic Analysis*[40], are enabling and provide a disclosure at the same general level of detail as found in the specification of the patents-in-suit. In particular, given the overall similarity between the disclosures in *Emerald 1997* and the patents-in-suit, including substantial portions of identical text and identical figures, it is not plausible to

[39] For example, SRI has claimed that *Emerald 1997* does not provide an enabling disclosure of a statistical detection method. *See* SRI International, Inc,'s "Amended" Response to Symantec's Invalidity and Inequitable Conduct Contentions (Dec. 16, 2005).
[40] P. Porras and A. Valdes, "Live Traffic Analysis of TCP/IP Gateways," http://www.sdl.sri.com/projects/emerald/live-traffic.html, Internet Society's Networks and Distributed Systems Security Symposium, Nov. 10, 1997 ("*Live Traffic Analysis*").

claim that one is enabled, but the other is not. A similar analysis applies to the *Live Traffic Analysis* paper.

90. The common specification of the patents-in-suit is remarkably similar to the text of the *Emerald 1997* paper. In order to assist my comparison of these two documents, I have reviewed a highlighted comparison of the two documents. My review of this comparison indicates that a great deal of the text of *Emerald 1997* was reproduced verbatim or nearly verbatim in the specification of the patents-in-suit. In addition, Figures 1 and 2 of *Emerald 1997* are virtually identical to Figures 2 and 3 of the patents. I understand that one of the inventors, Mr. Porras, described *Emerald 1997* as merely an REDACTED [41] This position is not plausible in light of the substantial overlap between the patents and this paper. I have examined the portions of the specification not present in the *Emerald 1997* paper and I do not believe that they provide any important disclosure required to implement the system described beyond what *Emerald 1997* disclosed in light of the knowledge of one of ordinary skill in the art. Similarly, a comparison of *Live Traffic Analysis* to the specification of the patents-in-suit shows substantial overlap in the text, and the Figure in *Live Traffic Analysis* also appears as Fig. 1 in the patents.

91. In particular, with regard to the disclosure in the patents-in-suit regarding statistical profiling / statistical detection method, I believe the written description of the patents alone sufficiently enables statistical profiling. SRI has stated that the *Statistical Methods* paper referenced in the specification of the patents-in-suit is not "essential material" as defined by the USPTO, which means the paper is not required in order for the patents to be enabled. In my opinion, the algorithms disclosed in *Statistical Methods*

[41] Porras Tr. 433.

would not be required for one of skill in the art to use the disclosures in the patents-in-suit to perform statistical profiling generally.[42]

92. In addition, I do not believe that the code included in the appendix to the patents-in-suit is required in order for the patents to be enabled. One of the inventors, Mr. Valdes, agreed.[43] The 1000+ pages of code in the appendix do include large portions of SRI's estat code base, which was used to implement statistical profiling. However, this code provides minimal commentary, and thus is extremely difficult to understand. I do not believe it would have been practical for someone with no familiarity with the code to reverse-engineer the statistical profiling algorithms from the appendix.[44] It would have been simpler for one of skill to use the patent specification's description of statistical profiling combined with his or her existing knowledge of intrusion detection to implement a statistical profiling method.

93. To the extent that SRI claims that *Emerald 1997* and *Live Traffic Analysis* are not enabling, my opinion is that this would necessitate a finding that the patents-in-suit themselves similarly do not satisfy the enablement and written description requirements.

REDACTED

[42] However, even if SRI contents the algorithms in *Statistical Methods* are required for enablement, this paper was publicly available as of 1995 and thus these algorithms were already known in the field. These algorithms would have been obvious to combine with a system such as that disclosed in *Emerald 1997*.
[43] Valdes Tr. 561.

REDACTED

REDACTED

131. I have determined that the files listed in Exhibit I are part of the code base for eResolve as it existed prior to November 9, 1998. Based on my analysis of these files, I have determined that prior to November 9, 1998 SR had implemented a complete version of eResolve.

132. None of the files listed in Exhibit I are contained in the appendix to the patents-in-suit. Furthermore, there is no mention of eResolve in the patents-in-suit or the articles incorporated by reference into the patents-in-suit.

133. To summarize, it is my opinion that eResolve was the inventors' best mode for performing response. I have also determined that eResolve was not disclosed. Therefore, by failing to disclose eResolve, the inventors failed to disclose their best mode for performing response.

134. I declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both (18 U.S.C. 1001).

Dated: June 15, 2006

L. Todd Heberlein

EXHIBIT B

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

SRI INTERNATIONAL, INC., a California Corporation, Plaintiff and Counterclaim-Defendant, v. INTERNET SECURITY SYSTEMS, INC., a Delaware corporation, INTERNET SECURITY SYSTEMS, INC., a Georgia Corporation, and SYMANTEC CORPORATION, a Delaware corporation, Defendants and Counterclaim- Plaintiffs.	Civil Action No. 04-CV-1199 (SLR)

DECLARATION OF STEPHEN G. KUNIN

I, Stephen G. Kunin, declare that:

1. I am employed by the law firm, Oblon, Spivak, McClelland, Maier & Neustadt, P.C. ("Oblon"), 1940 Duke Street, Alexandria, VA 22314. My *curriculum vitae*, including the list of publications that I have authored, is attached hereto as Exhibit A.

2. As of November 1, 2004, I am "of counsel" in the Oblon law firm, where I provide to clients and employees of the Oblon firm advice on the practice and procedures of the United States Patent and Trademark Office ("USPTO").

3. I have been retained by counsel for Symantec Corporation ("Symantec") as an expert witness in this action. A listing of the cases in which I have testified as an expert witness is attached as Exhibit B. A listing of the information and materials that I have reviewed and relied on is attached as Exhibit C. If called to testify as to the truth of the matters stated herein, I could and would do so competently.

4. I completed my undergraduate studies at Washington University in 1970 with a B.S. degree in Electrical Engineering. I attended the National Law Center of the George Washington University, receiving my Juris Doctor degree in law with honors in May of 1975. I am also a member of the Virginia State Bar and the Bar of the Court of Appeals for the Federal Circuit. I am registered to practice as a patent attorney before the U.S. Patent and Trademark Office.

5. From 1970-1979, I served as an Examiner in the Patent and Trademark Office.

6. From 1979-1982, I served as a Supervisory Primary Examiner (SPE). As an SPE at the USPTO, I ran the Patent Academy and served as an instructor there to train and instruct assistant Examiners in the examination of patent applications. As both a patent Examiner and SPE, I performed or supervised the work required to be performed that is comparable to that of the Examiners of the patents-in-suit.

7. From 1982 to 1989, I managed different patent examining groups in the USPTO. From 1982 until 1984, I directed the Manufacturing Technologies Examining Group 320. Then in 1984, I formed the Telecommunications, Measuring and Testing Examining Group 260 and became its first Group Director.

8. From 1989 to 1991, I served as the acting Deputy Assistant Commissioner for Patents. From 1991 to 1994, I served as Deputy Assistant Commissioner for Patents. In that role, I had responsibility for supervision of the Patent Examining Group Directors and as such for managing the Patent Examining Corps. I also had oversight responsibility for the Search and Information Resources Administration that included the Office of Patent Classification.

9. From 1994 through October 2004, I served as the Deputy Commissioner for Patent Examination Policy in the Office of the Commissioner for Patents in the United States Patent and Trademark Office. From 1994 to 2000 my title was Deputy Assistant Commissioner for Patent Policy and Projects in the Office of the Assistant Commissioner for Patents. From March 29, 2000 onward my title was Deputy Commissioner for Patent Examination Policy. As Deputy Commissioner for Patent Examination Policy, I participated in the establishment of patent policy for the various Patent Organizations under the Commissioner for Patents, including changes in patent practice and patent examination guidelines as set forth in the Manual of Patent Examining Procedure (the "MPEP"), revision of rules of practice and procedures, establishment of examining priorities and classification of technological arts, and oversaw the operations of the Office of Patent Legal Administration, Patent Cooperation Treaty Legal Administration, and the Office of Petitions.

10. I have direct experience in reviewing the work of Patent Examiners to determine whether they followed existing patent policy, practice and procedures and performed examinations of the required quality. This experience came as a result of my service as the Deputy Commissioner for Patent Examination Policy, a Patent Examining

Group Director and a Supervisory Primary Examiner. As a Group Director and a Supervisory Primary Examiner, I was often called upon to review the work of Examiners to determine whether those Examiners were sufficiently competent to be granted signatory authority. Such reviews included a review of the entire prosecution history of an allowed or pending application to determine whether the invention was understood by the Examiner, whether the focus and scope of the Examiner's prior art search was appropriate, whether relevant prior art references were properly applied, whether patent policy, practice and procedures were properly followed and whether the allowed claims were patentable over the art of record. Also, as the Deputy Commissioner for Patent Examination Policy, I decided appeals on quality reviewed applications where there was a disagreement between the Office of Patent Quality Review and a Patent Examining Group as to whether prosecution on the merits of a reviewed application should be reopened. I also reviewed and approved requests for reconsideration by Patent Examining Group Directors of adverse panel decisions by the Board of Patent Appeals and Interferences and determined whether Director-Ordered Reexaminations of issued patents should be instituted.

11. I have significant experience in reviewing the work of patent attorneys who prosecute patent applications before the USPTO, from the viewpoint of whether they comply with the USPTO requirements of candor and disclosure in dealing with Examiners. This experience comes as a result of my service as a member of the Committee on Discipline where my primary duties concerned review and evaluation of alleged violations of the ethics rules of the USPTO to determine whether probable cause existed to warrant disciplinary action. Further, I participated in the establishment of the 1992 version of 37 CFR § 1.56, which deals with an applicant's duty of candor and good faith to the USPTO. I also oversaw revisions to the MPEP which are found in Chapter 2000 dealing with an applicant's Duty of Disclosure.

12. I have considerable experience in reviewing patent specifications and

interpreting claim language, as a result of the positions I held at the USPTO for more than 34 years and as an attorney who has, since entering private practice, written infringement and non-infringement opinions.

13. I do not profess to have special technical expertise in network surveillance technology and have not been asked to opine on matters beyond USPTO patent practice and procedures and their application to the patents-in-suit. Although I am not a technical expert in this case, I received an undergraduate degree in electrical engineering and have examined and supervised the examination of numerous patent applications in a variety of fields, including managing the Telecommunications, Measuring and Testing Group 260 from 1984 through 1989.

14. I have done a review of the prosecution histories of U.S. Patent Numbers 6,321,338, 6,484,203, 6,708,212, and 6,711,615, hereinafter identified as the "'338," "'203," "'212," and "'615" patents-in-suit, respectively.

15. In my review of the prosecution histories of the '338 and '203 patents-in-suit, I note that applicants identified the "P. Porras and A. Valdes 'Live Traffic Analysis of TCP/IP Gateways', Networks and Distributed Systems Security Symposium, March 1998" (hereinafter "Live Traffic") and "A. Valdes and D. Anderson, 'Statistical Methods for Computer Usage Anomaly Detection Using NIDES', Proceedings of the Third International Workshop on Rough Sets and Soft Computing, January 1995" (hereinafter "Statistical Methods") publications in the written description sections of the patent applications as filed,[1] but did not otherwise submit them to the Examiner in an Information Disclosure Statement as was done by the applicants during the prosecution histories of the '212 and '615 patents-in-suit. In accordance with MPEP § 608.01(c) (8th

[1] For the '338 patent prosecution history, *see* Ex. D (SYM_P_0553694) for "Live Traffic" and Bates No. 0553679 for "Statistical Methods." For the '203 patent prosecution history, *see* Ex. E (SYM_P_0553852) for "Live Traffic" and Bates No. 0553837 for "Statistical Methods."

Ed., August 2001), if applicants wanted these publications to be considered by the Examiner, applicants should have submitted them in accordance with the requirements of 37 CFR §§ 1.97 and 1.98.

16. In my opinion, the mere citation of the " Live Traffic" and "Statistical Methods" publications in the '338 and '203 patents-in-suit did not inform the Examiner of the substance of the content of such publications. Consequently, it is my view that the Examiner did not consider the " Live Traffic" and "Statistical Methods" publications as prior art since they were neither cited by the Examiner in a Notice of References Cited (PTO-892) nor submitted by applicants in an Information Disclosure Statement in compliance with 37 CFR §§ 1.97 and 1.98.

17. The file histories of the patents-in-suit indicate that the applicants submitted IDS's during the prosecution of the patents-in-suit: an initial IDS dated July 19, 1999 and a supplemental IDS dated June 18, 2001 in the '338 patent file history; an IDS dated June 18, 2001 in the '203 patent file history; an initial IDS dated June 19, 2003 and a supplemental IDS dated January 5, 2004 in the '212 patent file history; and an initial IDS dated December 30, 2002, a first supplemental IDS dated June 19, 2003, and a second supplemental IDS dated July 28, 2003 in the '615 patent file history.

18. In my review of the file history of the '203 patent-in-suit, I note that the following references cited in the '338 patent do not appear on the face of the '203 patent (see Bates No. SYM_P_0553806):

U.S. Patent Documents

4672609	Jun., 1987	Humphrey et al.	371/21.
4773028	Sep., 1988	Tallman	364/550.
5210704	May., 1993	Husseiny	364/551.

5539659	Jul., 1996	McKee et al.	709/224.
5557742	Sep., 1996	Smaha et al.	395/186.
5706210	Jan., 1998	Kumano et al.	709/224.
5790799	Aug., 1998	Mogul	709/224.
6009467	Dec., 1999	Ratcliff et al.	709/224

Other Publications

Debar et al., "A Neural Network Component for an Intrusion Detection System,".COPYRGT. 1992 IEEE.

Denning et al., "Prototype IDES: A Real-Time Intrusion-Detection Expert System," SRI Project ECU 7508, SRI International, MenloPark, California, Aug. 1987.

Denning et al., "Requirements and Model For IDES--A Real-Time Intrusion-Detection Expert System," SRI Project 6169, SRI International, Menlo Park, CA, Aug. 1985.

Denning, "An Intrusion-Detection Model," SRI International, Menlo Park, CA, Technical Report CSL-149, Nov. 1985.

Dowell, "The Computerwatch Data Reduction Tool," AT&T Bell Laboratories, Whippany, New Jersey.

Fox et al., "A Neural Network Approach Towards Intrusion Detection," Harris Corporation, Government Information Systems Division, Melbourne, FL, Jul. 2, 1990.

Garvey et al., "Model-Based Intrusion Detection," Proceedings of the 14th National Computer Security Conference, Washington, DC, Oct. 1991.

Ilgun et al., State Transition Analysis: A Rule-Based Intrusion Detection Approach, IEEE Transactions on Software Engineering, vol. 21, No. 3, Mar. 1995.

Javitz et al., "The SRI IDES Statistical Anomaly Detector," Proceedings, 1991 IEEE Symposium on Security and Privacy, Oakland, California, May 1991.

Liepins et al., "Anomaly Detection: Purpose and Framework," US DOE Office of Safeguards and Security.

Lunt et al., "An Expert System to Classify and Sanitize Text," SRI International, Computer Science Laboratory, Menlo Park, CA.

Lunt, "A Survey of Intrusion Detection Techniques," Computers & Security, 12 (1993) 405-418.

Lunt, "Automated Audit Trail Analysis and Intrusion Detection: A Survey," Proceedings of the 11th National Computer Security Conference, Baltimore, MD, Oct. 1988.

Lunt et al, "Knowledge-Based Intrusion Detection".

Lunt et al., "A Prototype Real-Time Intrusion-Detection Expert System," Proceedings of the 1988 IEEE Symposium on Security and Privacy, Apr. 1988.

Porras et al., EMERALD: Event Monitoring Enabling Responses to Anomalous Live Disturbances, 20th NISSC--Oct. 9, 1997.

Porras et al., Penetration State Transition Analysis A Rule-Based Intrusion Detection Approach, .COPYRGT. 1992 IEEE.

Sebring et al., Expert Systems in Intrusion Detection: A Case Study.

Shieh et al., A Pattern-Oriented Intrusion-Detection Model and Its Applications .COPYRGT. 1991 IEEE.

Smaha, "Haystack: An Intrusion Detection System," .COPYRGT. 1988 IEEE Computer Society Press: Proceedings of the Fourth Aerospace Computer Security Applications Conference, 1988, pp. 37-44.

Snapp, "Signature Analysis and Communication Issues in a Distributed Intrusion Detection System," Thesis 1991.

Snapp et al., "DIDS (Distributed Intrusion Detection System)--Motivation, Architecture, and An Early Protoype, "Computer Security Laboratory, Division of Computer Science, Univ. of California, Davis, Davis, CA.

Tener, "AI & 4GL: Automated Detection and Investigation Tools," Computer Security in the Age of Information, Proceedings of the Fifth IFIP International Conference on Computer Security, W.J. Caelli (ed.).

Teng et al., "Adaptive Real-Time Anomaly Detection Using Inductively Generated Sequential Patterns," .COPYRGT. 1990.

Vacccaro et al., "Detection of Anomalous Computer Session Activity," .COPYRGT. 1989 IEEE.

Weiss, "Analysis of Audit and Protocol Data using Methods from Artificial Intelligence," Siemens AG, Munich, West Germany.

Winkler, "A UNIX Prototype for Intrusion and Anomaly Detection in Secure Networks," .COPYRGT. Planning Research Corp. 1990.

Jarvis et al., The NIDES Statistical Component Description and Justification, SRI International Annual Report A010, Mar. 7, 1994.

19. In my opinion, none of these documents were considered by the Examiner for the following two reasons. First, they were not submitted by applicants in an Information Disclosure Statement in compliance with 37 CFR §§ 1.97 and 1.98.[2] Second, although the procedure set forth in MPEP § 609 (8th Ed., August 2001) indicates that the Examiner "will consider information which has been considered by the Office in a parent application when examining a continuation application,"[3] my review of the prosecution history of the '203 patent, including most specifically the search notes page (*see* Bates No. SYM_P_0553822), indicates that the Examiner did not note that the references from the parent application that became the '338 patent-in-suit were checked. *See* MPEP § 719.05(II)(E) (8th Ed., August 2001) (requiring the Examiner to indicate either by application number or patent number that the references cited in the parent application were checked). Based on the Examiner's failure to indicate in the search notes box[4] that he had checked the references cited in the parent application, in my view, the Examiner did not access the patented file of the '338 patent-in-suit and did not review the references contained therein.

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[2] In contrast, in my review of the prosecution histories of the '212 and '615 patents-in-suit, I note that applicants did submit Information Disclosure Statements containing the references cited in the '338 patent.

[3] *See* MPEP 609(I)(A)(2) (8th Ed., August 2001).

[4] According to the search notes box (*see* Ex. F (SYM_P_0053822)), the Examiner completed his search of the prior art on July 31, 2002. The '338 patent-in-suit issued on November 20, 2001. In order for the Examiner to access the patented file in July 2002, he would have had to order it from the files repository since the PAIR system did not contain electronic copies of file histories for desktop access by the Examiner in 2002.

20. I am being compensated for my work on this case at my standard rate of $680 per hour, plus expenses. My compensation is not based on the outcome of this litigation.

21. I declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both (18 U.S.C. § 1001).

Date: June 15, 2006

Stephen G. Kunin

STEPHEN G. KUNIN

EXHIBIT C

'212 Claim 1	'203 Claim 1	'615 Claim 1
Method for monitoring an enterprise network, said method comprising the steps of:	A computer-automated method of hierarchical event monitoring and analysis within an enterprise network comprising:	A computer-automated method of hierarchical event monitoring and analysis within an enterprise network comprising:
deploying a plurality of network monitors in the enterprise network;	deploying a plurality of network monitors in the enterprise network;	deploying a plurality of network monitors in the enterprise network;
detecting, by the network monitors, suspicious network activity based on analysis of network traffic data,	detecting, by the network monitors, suspicious network activity based on analysis of network traffic data	detecting, by the network monitors, suspicious network activity based on analysis of network traffic data
	selected from the following categories: {network packet data transfer commands, network packet data transfer errors, network packet data volume, network connection requests, network connection denials, error codes included in a network packet};	**selected from one or more of the following categories: {network packet data transfer commands, network packet data transfer errors, network packet data volume, network connection requests, network connection denials, error codes included in a network packet, network connection acknowledgements, and network packets indicative of well-known network-service protocols};**
wherein at least one of the network monitors utillzes a statistical detection method;		
generating, by the monitors, reports of said suspicious activity; and	generating, by the monitors, reports of said suspicious activity; and	generating, by the monitors, reports of said suspicious activity; and
automatically receiving and integrating the reports of suspicious activity, by one or more hierarchical monitors.	automatically receiving and integrating the reports of suspicious activity, by one or more hierarchical monitors.	automatically receiving and integrating the reports of suspicious activity, by one or more hierarchical monitors.